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amended

least one copper salt and at least one organic halogen-containing compound selected from the group consisting of aromatic compounds, aliphatic phosphates, paraffins and mixtures thereof.

REMARKS

Applicant has amended the title of the present application to recognize that the claims presently in this application are broader in scope than is suggested by the original title. That is, the claims of the present application are directed to a polyamide composition which is stabilized with a copper salt and an organic halogen-containing compound. The original title is limited to a polyamide stabilized with a copper salt and an aromatic halogen compound. That the stabilizing agent may be an aliphatic phosphate or a paraffin, in addition to an aromatic halogen-containing compound, establishes that the amended title better defines the invention of the present application.

All the claims submitted for examination in this application ^{have} been objected to or rejected. Applicant has amended his claims and submits that all the claims currently in this application are patentable over the objection and rejections of record.

Turning first to the objection of record, Claims 4-6 and 10 stand objected to, under 37 C.F.R. §1.75(c), as being in improper form. Specifically, these claims stand objected to as being multiple dependent claims, dependent from another multiple dependent claim.

Applicants have removed the objection to Claims 4-6 and 10 by amending the dependency of these claims, as well as Claim 3, so that they each of them depend from new Claim 12. Insofar as all of the objected to claims are dependent from a single claim, the basis for the objection to these claims is removed. Applicants submit that the four amended claims,

Claims 4-6 and 10, originally subject to objection, and thus not examined on the merits, are now in condition for examination, along with the other claims currently in this application.

Turning to Claim 9, that claim stands rejected on formal and substantive grounds. It is unnecessary to discuss the merits of the grounds of rejection of Claim 9 insofar as Claim 9 has been cancelled. Therefore, the grounds of rejection of Claim 9 are moot.

Turning to the formal grounds of rejection, Claims 1-3 stand rejected, under 35 U.S.C. §112, second paragraph, as being indefinite. Specifically, Claim 1 is deemed indefinite based on improper Markush group language. Suffice it to say, Claim 1 has been redrafted as new Claim 12. New Claim 12 includes a Markush group which meets the requirements imposed in the outstanding Official Action. Claims 2 and 3, which originally depended from Claim 1, have been amended to depend from new Claim 12.

In view of the above remarks, which establishes that Claim 12 overcomes the indefiniteness rejection based on improper Markush group language, it is submitted that Claim 12, as well as amended Claims 2 and 3, which were rejected as being indefinite based on their dependency from Claim 1, are patentable under 35 U.S.C. §112.

Claim 7 has also been rejected, under 35 U.S.C. §112, second paragraph, as being indefinite, based on improper Markush group claim language. Claim 7 has been amended. Applicant submits that the amended language of Claim 7 recites proper Markush group language and thus this claim is patentable under 35 U.S.C. §112, second paragraph.

Claim 3 is separately rejected, under 35 U.S.C. §112, second paragraph, as being indefinite for its recitation of the term “copper (I) halide.” The Official Action avers that a parenthesis is not permitted in a claim. The Official Action suggests that this rejection could

be overcome by replacing the above phrase, prompting this ground of rejection, with the synonymous limitation --cuprous halide--.

Although applicant disagrees with the interpretation that the use of parenthesis makes a claim unpatentable, applicant, in a spirit of cooperation, has amended Claim 3 to replace "copper (I) halide" with --cuprous halide--. Applicant submits that the indefiniteness rejection of Claim 3 is therefore overcome.

All the claims examined on the merits have been rejected on three substantive grounds. The first of these grounds is directed to Claims 1-3, 7-9 and 11 which stand rejected, under 35 U.S.C. §103(a), as being unpatentable over European Patent Application 0 390 277 to Gijsman. The Official Action states that Gijsman discloses a stabilized polyamide composition which contains 100 parts by weight of a polyamide, 0.001 to 0.2 part by weight of copper and 0.1 to 25 parts by weight of a halogen-substituted organic compound. The Official Action further states that the copper is added in the form of a water-insoluble salt, such as copper iodide, and that the halogen-substituted organic compound is a halogen-substituted epoxy or a styrene oligomer or polymer.

What is not stated in the Official Action is that the Gijsman polyamide composition is clearly limited to a composition of a specific polyamide, polyamide 4.6. Indeed, that is the title of the Gijsman application. If further evidence of that the scope of the Gijsman application is limited to a polyamide 4.6 composition, the Abstract of the Disclosure, at Page 1, as well as the first line of the specification, at Page 2, makes it clear that the Gijsman invention is directed to a copper-stabilized polyamide 4.6 composition.

The basis for the rejection of Claims 1-3, 7-9 and 11, as being unpatentable over Gijsman, is presumably the limited scope of the negative limitation wherein it is recited that

the organic halogen-containing compound is not an iodide containing compound. In this regard, the comment made in the Official Action, regarding the negative limitation associated a brominated styrene oligomer, suggests that the examination conducted in this application was directed to the wrong set of claims. Attention is directed to PCT Article 34, as set forth at MPEP §1893.01(b)(2), wherein applicant's right to enter claim amendments prior to or at the start of the international preliminary examination, is set forth. Insofar as such claim amendment was made in this application, its entrance must be honored.

This point is of academic interest only, however, because applicant, in his amendment of original Claim 1, as new Claim 12, has broadened the scope of the proviso to exclude all halogen-containing epoxy or styrene oligomers or polymers in the event that the polyamide is polyamide 4.6. As such, the disclosure of Gijsman is totally outside the scope of Claim 12 and amended Claims 2-6 and 10, which each depend from Claim 12. It is also emphasized that the same proviso is included in amended independent Claim 7, from which Claim 8 depends.

The predicate for the rejection under 35 U.S.C. §103(a) is that Gijsman teaches that the use of a brominated epoxy oligomer or polymer is outside the scope of the proviso included in Claims 1 and 7 of the original claims. It is therefore apparent that the amendment to Claims 1 and 7, as new Claim 12 and amended Claim 7, respectively, providing wider scope of the proviso, excludes all the organic halogen-containing compounds within contemplation of the polyamide 4.6 composition disclosed in Gijsman.

Turning to the specific teaching of Gijsman, that disclosure, as stated above, is limited to a polyamide 4.6 composition. As indicated in Gijsman, polyamide 4.6 is characterized by an extraordinarily high processing temperature. Attention is directed to Gijsman, at Page 2,

line 22, wherein it is recited that the processing temperature of polyamide 4.6 is in the range of between 300°C and 330°C. Those skilled in the art are aware that at these high processing temperatures halogenated compounds, such as styrene oligomers and epoxy oligomers, which are taught to be particularly suitable for use in the Gijsman invention, undergo dehalogenation reactions leading to the presence of either free halogen radicals, low molecular weight compounds-containing halogens or even halogen ions.

This conclusion is consistent with the stability of the backbone structure of styrene or epoxy oligomers at these elevated temperatures. However, at these high temperatures cleavage of some carbon to halogen bonds occur. This leads to a situation in the processing of polyamide 4.6 wherein a copper compound containing halogen is formed in the co-presence of low molecular weight halogen-containing compounds. As such, the stabilization of the Gijsman composition is achieved in the same manner as other polyamides, which are processed at lower temperatures, are stabilized, using copper compounds mixed with low molecular weight halogen compounds, in the then prior art. As such, the teaching of Gijsman provides a means for processing of the specific polyamide, polyamide 4.6, in a manner analogous with the stabilization of the then prior art stabilization of other polyamides which are processed at far lower temperatures.

The stabilization of polyamides, in the prior art at the time of the filing of Gijsman, as well as Gijsman itself, however, is totally unrelated to the stabilization effect obtained in the invention of the present application. The present application is directed to a stabilized polyamide that may be processed at far lower temperatures utilizing a copper salt in combination with a unique class of organic halogen-containing compounds. These organic compounds may be aromatic compounds, aliphatic phosphates or paraffins. Applicant

submits that nothing in the prior art suggests the use of this stabilizing combination, which is totally unrelated to any high temperature dehalogenation reaction of halogenated organic compounds. Indeed, there is nothing in Gijsman or any other prior art reference which suggests that the combination claimed herein is applicable in non-high temperature dehalogenation reactions of halogenated organic compounds.

For example, there is no suggestion in the art, including Gijsman, that suggests that, in the absence of a high temperature dehalogenation reaction of a halogenated organic compound, a low processing temperature polyamide, which are commonly employed in the art, such as polyamide 6 or polyamide 6.6, could be stabilized by the combination claimed herein.

It is emphasized that even if the above remarks were not determinative of patentability, which applicants strongly urge is the case, the limitations of the dependent claims, which recite specific aromatic compounds, clearly distinguish over the teaching of Gijsman. These compounds are either not styrene or epoxy compounds or are styrene or epoxy monomeric compounds which, the above remarks clearly establish, are totally outside the scope of the invention disclosed in Gijsman. That is, Gijsman requires that compositions within its contemplation include a styrene or an epoxy oligomer or polymer. No such compositions are within the scope of the amended dependent composition and method claims of the present application.

The second substantive ground of rejection is directed solely to Claim 11. Claim 11 stands rejected, under 35 U.S.C. §103(a), as being unpatentable over Gijsman taken in view of U.S. Patent 4,299,926 to Rody et al.

Rody et al. is applied for its disclosure, at Column 63, lines 41-44, of the synergistic effects that can arise when the light stabilizer of that disclosure, sterically hindered polyalkylpiperidine groups, are utilized in the light stabilization of plastics.

The patentability of Claim 11 is predicated upon the patentability of Claim 7, from which Claim 11 depends. Thus, even if the disclosure in Rody et al. made it obvious to utilize an organic phosphite, one of the class of organic phosphorus-containing compounds recited in Claim 11, still patentability would be predicated upon the above remarks establishing the patentability of Claim 7.

It is emphasized, however, that patentability of Claim 11 also rests with the limitation of that dependent claim. The teaching that an organic phosphite, when utilized with a polyalkylpiperidine, has synergistic effects certainly does not apply when an organic halogen-containing compound is substituted for the polyalkylpiperidine. Clearly, there is no structural relationship or structural identity between a polyalkylpiperidine and an organic halogen-containing compound whether the organic compound is an aromatic, aliphatic phosphate or paraffin compound.

It is furthermore emphasized that the stabilization of the present application is recited to be based on temperature stabilization, that is, thermal stabilization. The teaching of Rody et al., utilizing an organic phosphite in combination with a sterically hindered polyalkylpiperidine, is directed to light stabilization. Those skilled in the art are aware of the clear line of distinction between light stabilizer compounds and thermal stabilizer compounds.

The third substantive ground of rejection involves the rejection of Claims 1-3, 7 and 9 as being anticipated, under 35 U.S.C. §102(b), by Gijsman. The Official Action argues that

the disclosure of a composition that contains a polyamide, a copper halide and a brominated epoxy oligomer or polymer anticipates these claims.

As stated above, the broader proviso of the amended claims clearly excludes all the halogen-containing compounds disclosed in the Gijsman polyamide 4.6 composition. Specifically, the class of stabilizers which are outside the scope of brominated epoxy oligomers or polymers but may not be within the scope of halogenated styrene oligomers and polymers are within the scope of the negative proviso of Claim 12, from which Claims 2 and 3 depend, and amended Claim 7. Thus, the amendment to the claims eliminate any possibility that the teaching of Gijsman anticipates any of the claims currently in this application.

It is emphasized that the amendments to Claim 1, as new Claim 12, and Claim 7 introduces no new matter or is broader in scope than the enabling disclosure. This is so in that the amendments in Claims 7 and 12 are no more than the excision of members of a disclosed genus which have been found in the prior art. This excision does not create a new sub-genus which is rejectable under 35 U.S.C. §112, first paragraph. In re Johnson 558 F.2d 1008, 194 USPQ 187,196 (CCPA 1977). The above remarks are particularly apt in the present application insofar as the applied Gijsman disclosure is mentioned in the specification of the present application, at Page 3, lines 9-12.

It is noted the new Claim 13 has been added to the application. This claim repeats the limitations of Claim 12 without the inclusion of the negative limitation of that claim. However, the scope of the polyamides within its contemplation is limited to the class of polyamides mentioned in the specification at Page 4, lines 20-23.

Claim 13 is patentable over all three grounds of rejection, which rely on the disclosure of Gijsman. Gijsman is, of course, limited to a composition which includes polyamide 4.6.

That Claim 13 does not encompass polyamide 4.6 predicates novelty over this reference. That polyamide 4.6 is a very high temperature polyamide, whose special processing problems make it untypical of the polyamides recited in Claim 13 establish that it would not be obvious to extend the teaching of Gijsman, limited as that disclosure is to polyamide 4.6, to the polyamides within the scope of new Claim 13.

The above amendment and remarks establish the patentable nature of all the claims currently in this application. Notice of Allowance and passage to issue of these claims, Claims 2-8 and 10-13, is therefore respectfully solicited.

Respectfully submitted,

A handwritten signature in black ink, reading "Marvin Bressler", with a long horizontal flourish extending to the right.

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APPENDIX

IN THE TITLE:

(Amended): POLYAMIDE COMPOSITION[, STABILIZED WITH A COPPER SALT AND AN ORGANIC HALOGEN-CONTAINING COMPOUND [AROMATIC HALOGEN COMPOUNDS]

IN THE CLAIMS:

2. A [Stabilized] polyamide composition in accordance with [claims] Claim 12 [, characterized in that the] wherein said copper salt is selected from the group consisting of [among] copper salts of an organic acid and copper salts of an inorganic acid [acids].

3. A [Stabilized] polyamide composition in accordance with Claim 12 [claims 1 or 2, characterized in that the] wherein said copper salt is a cuprous [copper (I)] halide.

4. A [Stabilized] polyamide composition in accordance with [at least one of the proceeding claims, characterized in that the] Claim 12 wherein said aliphatic phosphate is selected from the group consisting of [among tris(tribromoneopentyl)phosphate] tris(tribromoneopentyl) phosphate, [dibromodioxaphosphorinan] dibromodioxaphosphorinane derivatives and chlorine containing polyphosphonates.

5. A [Stabilized] polyamide composition in accordance with [at least one of claims 1 to 3, characterized in that the] Claim 12 wherein said aromatic compound is selected from the group consisting of [among dekabromophenyl, dekabromophenylether] dekabromophenyl, dekabromophenylether, chlorinated [dimethanenodibenzo(a,e)-cyclooctenes]

dimethanedibenzo(a,e)-cyclooctanes, tetrabromobisphenol A, [chlorinated] chlorinated or brominated styrene oligomers, [tetra-bromobisphenol A derivatives] tetrabromobisphenol A derivatives and polydibromostyrene.

6. A [Stabilized] polyamide composition in accordance with Claim 12 wherein said [at least one of claims 1 to 3, characterized in that the] paraffin is [chloroparaffin] chloroparaffin or bromoparaffin.

7. A [Method] method for the preparation of a stabilized composition[, characterized in that] comprising mixing at least polyamide, at least one copper salt and at least one organic halogen-containing compound selected from [among] the group consisting of [:(a)] aromatic compounds, [; (b)] aliphatic phosphates, [; and (c)] paraffins [; or] and mixtures thereof [are mixed with one another], with the proviso that[, if [the] said organic halogen-containing compound is an aromatic compound, [is a brominated styrene oligomer the] said polyamide is not polyamide 4.6 [and with the proviso that the organic halogen containing compound is not an iodide containing compound] if said aromatic compound is a styrene oligomer or polymer or a halogen-substituted aromatic epoxy oligomer or polymer.

8. A method [Process] in accordance with [claim 7, characterized in that the] Claim 7 wherein said at least one copper salt and said [the] at least one organic halogen-containing compound are added in the form of a masterbatch.

10. A [Stabilized] polyamide composition in accordance with [at least one of claims 1 to 6, characterized in that further] Claim 12 comprising at least one compound selected from the group consisting of organic [phosphide] phosphites, inorganic phosphonates, [phosphonate or] inorganic [hypophosphate is contained] hypophosphates and mixtures thereof.

11. A [Process] method for the preparation of a stabilized [stabilized] polyamide composition in accordance with [claims 7 or 8, characterized in that in a further processing step] Claim 7 comprising adding at least one compound selected from the group consisting of organic [phosphite] phosphites, inorganic [phosphonate] phosphonates, [or] inorganic [hypophosphite] hypophosphites and mixtures thereof [is added to the mixture obtained in accordance with claims 7 or 8].